

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING ORDER NO. R5-2006-0031 REVISION 2

CALIFORNIA WATER CODE SECTION 13267
FOR
CHEMURGIC AGRICULTURAL CHEMICALS, INC.
GROUNDWATER TREATMENT SYSTEM
STANISLAUS COUNTY

This Monitoring and Reporting Program is issued to Chemurgic Agricultural Chemicals (hereafter Discharger) pursuant to California Water Code section 13267, which authorizes the Executive Officer of the California Regional Water Quality Control Board, Central Valley Region (hereafter Central Valley Water Board) to issue a Monitoring and Reporting Order (Order). This Order incorporates requirements for verification monitoring, as well as requirements for monitoring the groundwater treatment system, when operating as permitted by Waste Discharge Requirements R5-2006-0031.

The Executive Officer finds:

INTRODUCTION

1. In 1961, Chemurgic Agricultural Chemicals purchased property at 3106 South Faith Home Road in Turlock (Site) that had been contaminated with benzene hexachloride (Lindane).
2. In 1995, Chemurgic excavated and treated about 4,000 tons of soil containing Lindane.
3. Between 1997 and 2012, Chemurgic operated a groundwater extraction, treatment, and reinjection/recirculation system pursuant to Waste Discharge Requirements No. R5-2006-0031(WDRs). Since 2004, the treatment system has removed about 305 pounds of pollutants.
4. The groundwater monitoring data show that benzene hexachloride isomers have been steadily declining in off-site wells since about 2000. In 2011, benzene hexachloride was not detected in any off-site wells. Graphical analysis of the data show that concentrations at the extraction wells have also been declining as shown in Figure 1.
5. Chemurgic presented the results of a literature search that showed that insitu biodegradation of benzene hexachloride compounds has occurred at other localities. Therefore, Chemurgic expects declining trends to continue in the absence of active remediation. Central Valley Water Board staff concurred that the groundwater extraction system may be turned off while Chemurgic conducts four quarters of verification monitoring to evaluate if the declining trends will continue in the absence of active remediation. Accordingly, the groundwater extraction system was turned off in September 2012.
6. This Monitoring and Reporting Order is issued by the Central Valley Water Board, pursuant to California Water Code (CWC) section 13267 and is necessary to verify that concentrations of constituents in groundwater continue to decline. It also prescribes monitoring of the groundwater extraction and treatment system if Chemurgic requests in

writing its intent to resume groundwater extraction and treatment as defined in Waste Discharge Requirements R5-2006-0031.

VERIFICATION MONITORING

During verification monitoring, groundwater samples shall be obtained quarterly from groundwater monitoring wells MW-502, MW-513, and MW-507A shown in Figure 2, and shall be analyzed for the constituents and methods listed in Table 1. After four quarters of monitoring, an assessment of the monitoring results will be conducted and Chemurgic will either: 1) notify the Central Valley Water Board of its intent to resume remediation under the provisions of these Waste Discharge Requirements (WDRs); 2) request that the Central Valley Water Board rescind these WDRs; or 3) request that these WDRs be revised. If these WDRs need to be rescinded or revised, and are not adopted by the Central Valley Water Board by 1 December 2013, then verification monitoring shall occur annually in the fourth quarter.

Prior to sampling, the wells shall be purged until measurement of pH, temperature, turbidity, and electrical conductivity have stabilized, indicating that the samples are representative of groundwater immediately surrounding the well screen.

Table 1. Verification Monitoring Schedule

Monitoring Wells ¹	Analytical Methods	Analytes	Frequency
MW-502 MW-513 MW-507A	EPA 8081A EPA 8260B	Benzene hexachloride Standard Analyte Scan	Quarterly for at least 4 consecutive quarters, then annually in the 4 th quarter, starting in 2013 ² .

¹ All these wells shall be monitored for depth to groundwater at the frequency indicated.

² Annual post-treatment sampling shall occur if Chemurgic has not reinstated remediation, or if these WDRs have not been rescinded or revised.

VERIFICATION REPORTING

Quarterly data tables and laboratory data sheets shall be provided to Central Valley Water Board staff by the first day of the second month following the month of monitoring, i.e. by **1 February** for December samplings, **1 May** for March samplings, **1 August** for June samplings, and **1 November** for September samplings, or as otherwise indicated by Central Valley Water Board staff, until such time as the Executive Officer determines that the submittals are no longer necessary. These quarterly data tables and laboratory data sheets may be transmitted electronically to Central Valley Water Board staff.

A Verification Evaluation Report shall be submitted to the Central Valley Water Board in hardcopy format and electronically by **31 July 2013**. This report shall contain a description of the previous four quarterly sampling events, presentation of the data obtained over the four quarter monitoring period, a diagram of the facility and its monitoring points, an evaluation of equilibrium conditions, an assessment of degradation activities, and notification of intent to resume remediation, or a recommendation to rescind or revise these WDRs.

GROUNDWATER TREATMENT MONITORING

During the operation of the groundwater treatment system, the groundwater treatment and monitoring network shall be monitored as described in the following sections.

Influent Monitoring

Influent samples shall be collected after the last connection before the extracted groundwater enters the treatment process. Influent samples should be representative of the influent quality. Time of collection of a grab sample shall be recorded. Influent sampling shall commence the month following a detection of a benzene hexachloride (BHC) isomer in the effluent of the lead treatment vessel exceeding or equal to 30 ug/l. Monthly influent sampling shall continue until the lead treatment vessel is replaced pursuant to Provision C.3. The influent monitoring program shall be followed as shown in Table 2.

Table 2. Influent Monitoring Schedule

Constituents	EPA Method	Practical Quantitation Limit ¹	Sampling Frequency
Benzene hexachloride isomers	8081A	0.05 ug/l	monthly ²

¹ All concentrations between the Method Detection Limit and the Practical Quantitation Limit shall be reported as trace.

² Monthly sampling of influent shall commence whenever the concentration of any listed BHC isomer exceeds 30 ug/l in the effluent of the lead treatment vessel and monthly monitoring shall continue until the lead vessel is replaced.

Effluent Monitoring

Effluent samples from the lead carbon adsorption vessel shall be collected after exiting the lead vessel, and effluent samples from the last vessel shall be collected from the outlet prior to discharge to the infiltration trench. Samples collected from the outlet prior to discharge to the infiltration trench will be considered adequately composited. Time of collection of a grab sample shall be recorded. Metered flow measurements shall be continuous and cumulative. Effluent monitoring shall follow the schedule shown in Table 3.

Table 3. Effluent monitoring schedule

Constituents	EPA Method	Practical Quantitation Limit ¹	Sample Station	Sampling Frequency
Benzene hexachloride	8081A	0.05 ug/l	lead vessel and last vessel	Monthly
Chlorobenzene Dichlorobenzene	8260B	0.5 ug/l	lead vessel and last vessel	Monthly ² Annually ³
pH	--	--	last vessel	Annually ³

¹ All concentrations between the Method Detection Limit and the Practical Quantitation Limit shall be reported as trace.

² If chlorobenzene compounds are detected above the Practical Quantitation Limit in MW-507A, then these compounds shall be sampled monthly from the lead and last vessels.

³ Annually in the fourth quarter (October-December)

If new monitoring wells are installed for the groundwater treatment system at any time in the future, prior to construction, plans and specifications for groundwater monitoring wells shall be submitted to Central Valley Water Board staff for review and approval. After construction, new wells shall be sampled and analyzed for the constituents below and added to the monitoring program.

Prior to sampling, the wells shall be purged of at least three well volumes until measurement of pH, temperature, turbidity, and electrical conductivity have stabilized, indicating that the samples are representative of groundwater immediately surrounding the well screen.

Chemurgic has 9 monitoring wells (PZ-101, MW-501, MW-502, MW-504, MW-505, MW-507A, MW-510, MW-512, MW-513) associated with the groundwater treatment system as illustrated in Figure 3. Chemurgic also monitors a Turlock Irrigation District well (TID-7). The groundwater monitoring program for the monitoring wells listed below, and any additional wells installed subsequently, shall follow the schedule in Table 4.

Table 4. Groundwater Treatment System Monitoring Schedule

Constituents	EPA Method	Practical Quantitation Limit ¹	Sampling Frequency	Wells to be Monitored
Depth to Groundwater	--	0.01 foot	Annually ²	PZ-101, MW-501, MW-502, MW-504, MW-505, MW-507A, MW-510, MW-512, and MW-513
Benzene hexachloride	8081A	0.05 ug/l	Annually ²	MW-501, MW-502, MW-504, MW-505, MW-507A, MW-510, MW-513, TID-7
Chlorobenzene Dichlorobenzene	8021B	0.5 ug/l	Annually ²	MW-507A, MW-513

¹ All concentrations between the Method Detection Limit and the Practical Quantitation Limit shall be reported as trace.

² Annually in fourth quarter

GROUNDWATER TREATMENT SYSTEM REPORTING

When reporting the data, the Discharger shall arrange the information in tabular form so that the date, the constituents, and the concentrations are readily discernible. The data shall be summarized in such a manner as to illustrate clearly the compliance with Waste Discharge

Requirements. Reports describing the treatment system operation shall arrange benzene hexachloride data to illustrate the ratio of effluent to influent concentration at the lead vessel.

As required by the California Business and Professions Code Sections 6735, 7835, and 7835.1, all reports shall be prepared by registered professional or their subordinate and signed by registered professional.

Monthly Data Submittals

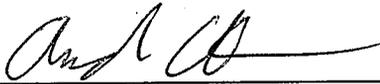
A data table displaying the monthly influent and effluent results, corresponding carbon replacement, if applicable, a cover letter discussing any system downtime or operational problems, if any, shall be transmitted to Central Valley Water Board staff by the **20th day of the following month**. Monthly data submittals may be transmitted via paper copy or via email.

Annual Monitoring Reports

An Annual Report shall be submitted to the Board by **1 February** of each year. This report shall contain the results of the annual groundwater sampling program, an evaluation of the effectiveness, progress of the remediation, and recommendations for improving the effectiveness of the remediation system. The Annual Report shall include the following in tabular form: water quality analytical data, depth to groundwater and groundwater elevation, cumulative quantity of groundwater treated, and an estimate of mass of constituents removed.

The results of any monitoring done more frequently than required at the locations specified in the MRP also shall be reported to the Board.

The Discharger shall implement the above monitoring program as of the date of the Order.

Ordered by: 
for PAMELA C. CREEDON, Executive Officer

3/28/13
(Date)

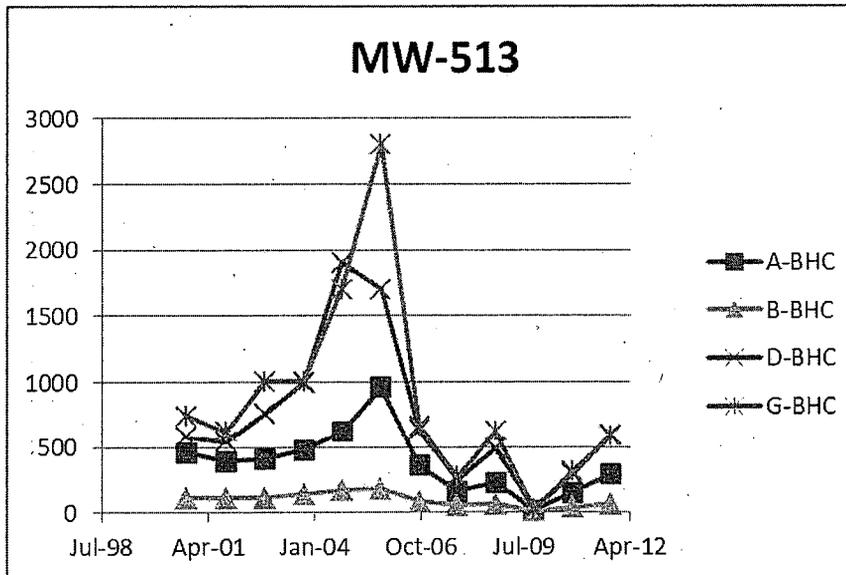
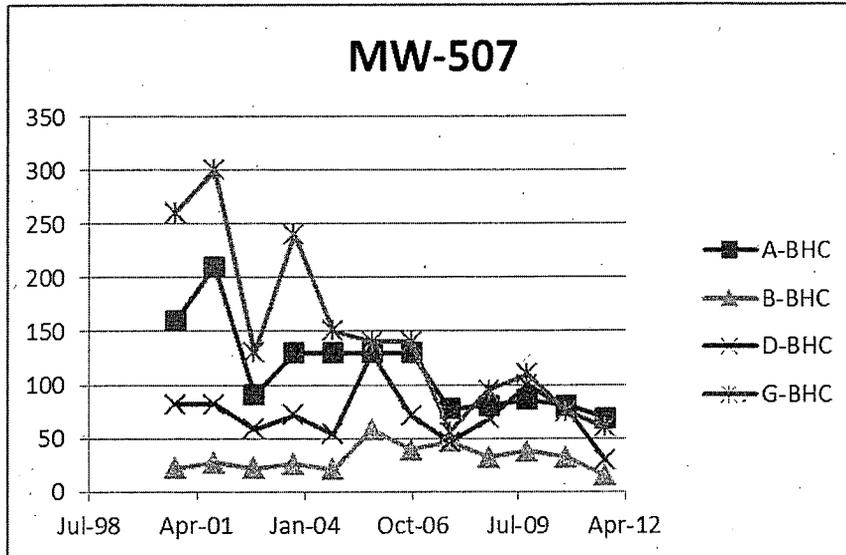


Figure 1
Benzene Hexachloride Concentrations (BHC, ug/L)

In groundwater monitoring wells adjacent to extraction wells
Chemurgic Agricultural Chemicals, Inc.

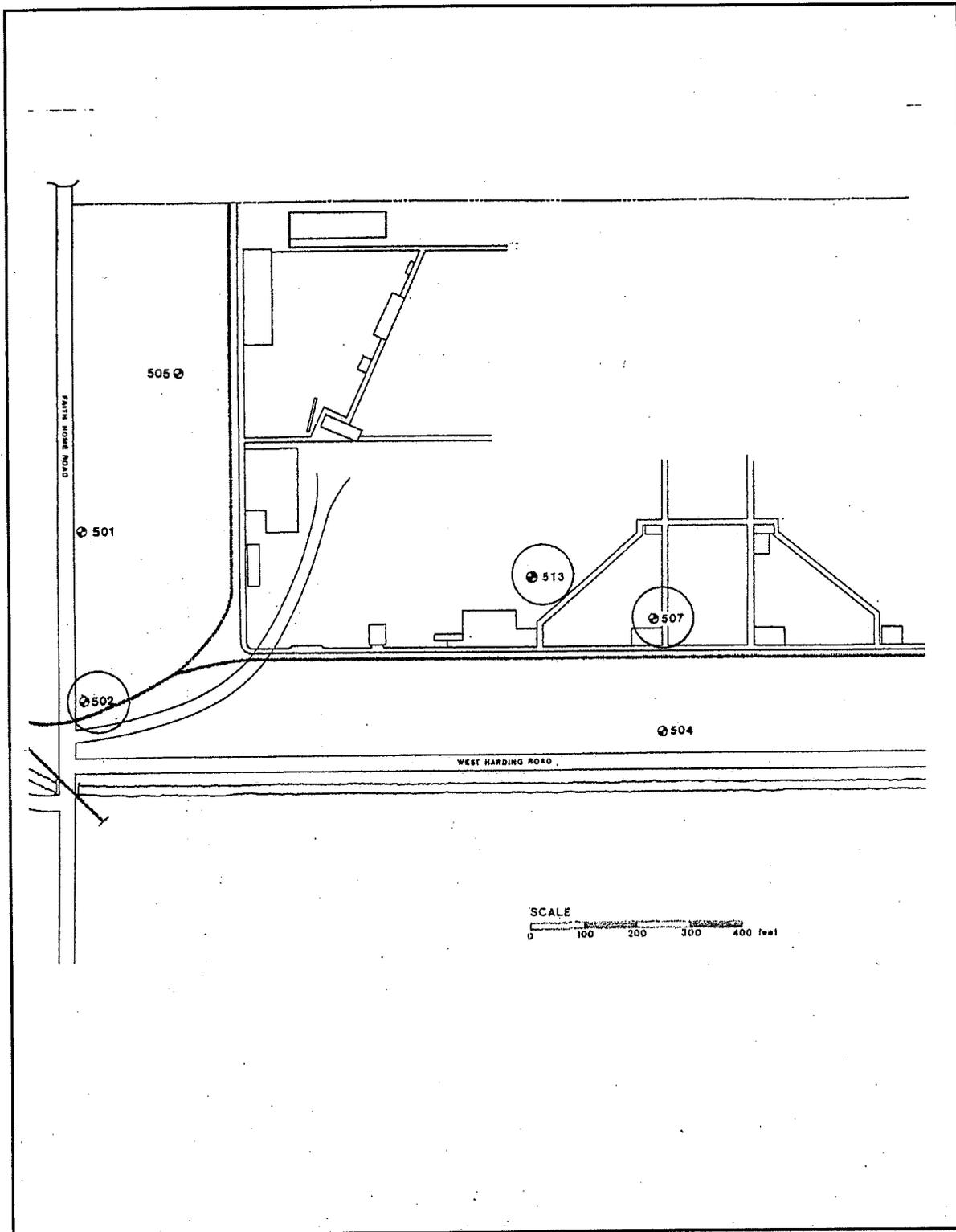


Figure 2
Verification Monitoring Wells

